

## Two New Species of *Chrysura* from Western North America (Hymenoptera : Chrysididae)

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The following two species are described to make the names available for biological studies now in progress on nearctic *Chrysura*.<sup>1</sup>

The more unfamiliar terms and ratios used in the descriptions, or those which need precise definition are: Coarse puncture: large puncture, usually at least 0.40 times midocellus breadth. Dense punctation (spacing): punctures nearly contiguous. Fine puncture: very small puncture, usually less than 0.20 times midocellus breadth. Head length: maximum length from vertex to anterolateral corner of clypeus (Fig. 10, HEL). Head width: maximum width in front view (Fig. 10, HEW). Least interocellar distance: shortest distance between inner margins of lateral ocelli (Fig. 10, GID). Least interocular distance: least distance between inner margins of compound eyes (Fig. 10, LID). Length: maximum length with head vertical, clypeus to apical margin of tergite III. Malar space: shortest distance between bottom of compound eye and mandibular articulation (Fig. 10, MS). Medium puncture: average size puncture, about 0.30 times midocellus breadth. Moderate punctation (spacing): punctures separated by about one puncture diameter. Ocellocular distance: least distance from inner margin of compound eye to lateral ocellus (Fig. 10, OOD). Scapal basin: in general, the area beginning a short way below midocellus, between compound eyes, and above antennal sockets. Scape: length of first antennal segment measured in dorsal view. Sparse punctation (spacing): punctures separated by an average of two or more puncture diameters. Subantennal distance: distance from bottom of antennal socket to lower clypeal margin (Fig. 10, SAD). Width: maximum distance at posterior margin of tergite I.

The shape of the inner, apical, and outer margin of the cuspis (Fig. 6 a-c) and the gonostyle (Fig. 7 a-c) are of fundamental importance in the definition of male *Chrysura*. The digitus (Fig. 6 d) is nearly uniform in the nearctic species, both in length and the number of tooth-like projections. For this study, the genitalia were cleared in hot five per cent potassium hydroxide for ten minutes, dehydrated with absolute

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<sup>1</sup> Part of a dissertation, Biosystematics of the Nearctic *Chrysura* with a Consideration of Related Palearctic Forms (Hymenoptera : Chrysididae), submitted to the University of California, Davis, as a partial fulfillment for the Ph.D. degree, 1969.

alcohol, transferred to xylene, mounted on slides, with the aedeagus flattened, and with the gonostyle separated from the cuspis and digitus.

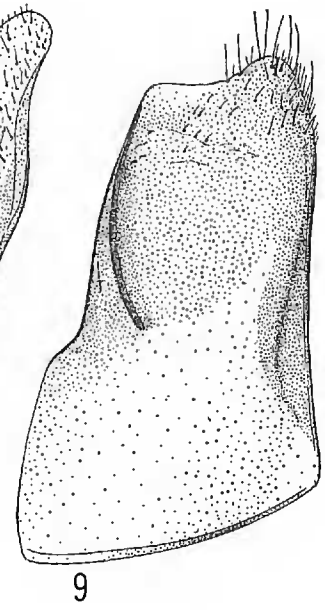
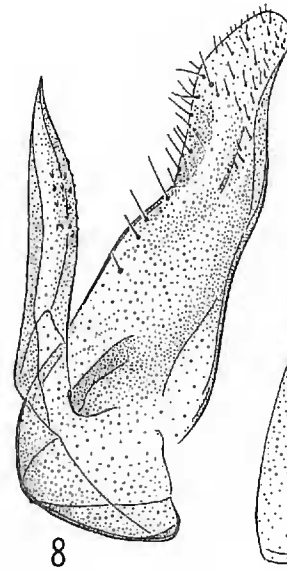
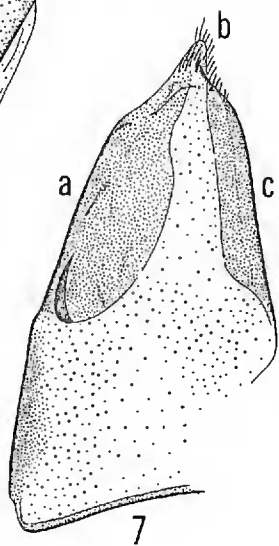
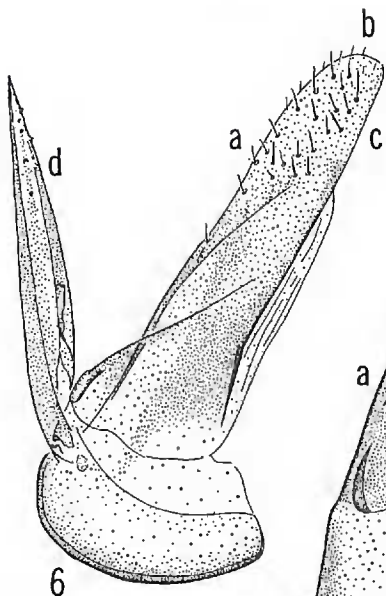
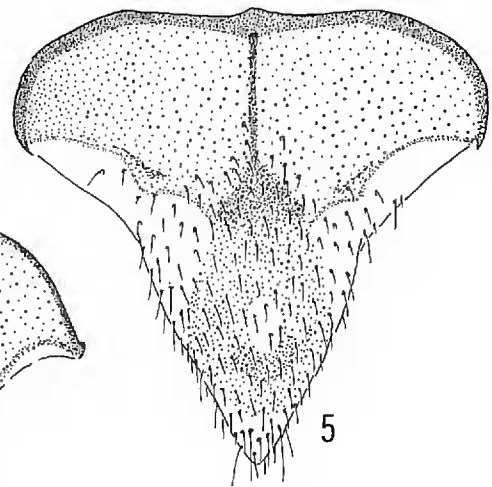
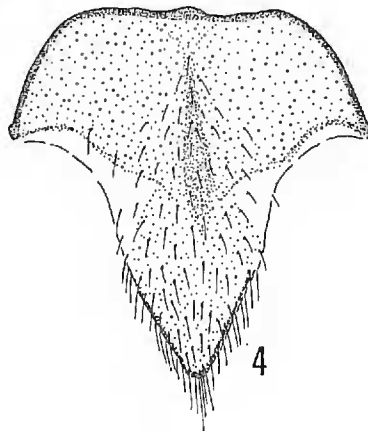
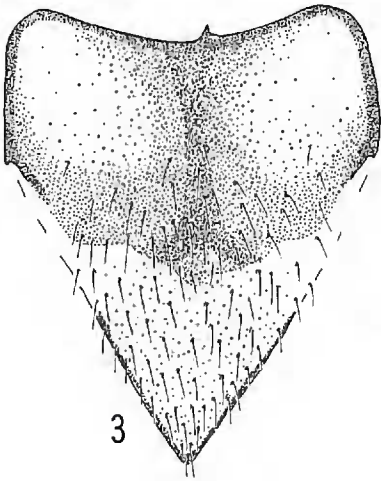
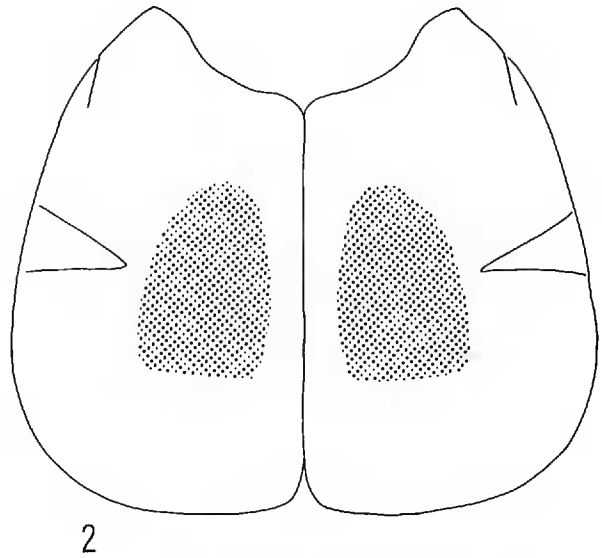
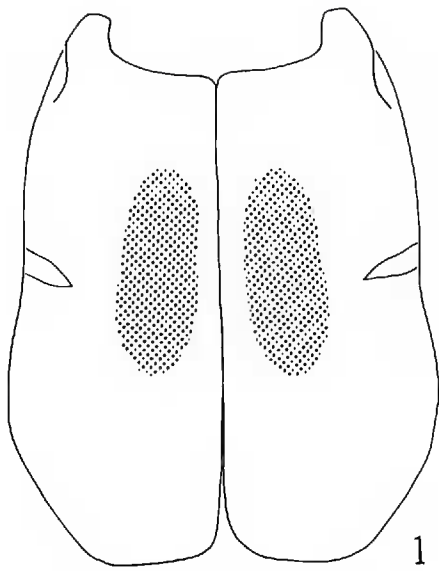
The mean of the ratios, and the standard deviation of the mean for the series examined follows the ratio for the holotype, i.e., head 1.2 ( $\bar{x} = 1.2 \pm 0.04$ ) times broader than long. The length and width of specimens varies considerably, but the length-width ratio is relatively constant.

### *Chrysura crescentis* Horning, new species

MALE.—Length 3.7 mm (2.5–5.0 mm,  $\bar{x} = 4.0$  mm,  $n = 7$ ), width 0.9 mm (0.8–1.2 mm,  $\bar{x} = 1.1$ ). Light bluegreen on vertex, green on scapal basin and face venter; sternite II with two elongate, noncontiguous dark violet spots (Fig. 1); legs blue-green, tarsi reddish-brown; flagellomeres I–III green dorsally; wings uniformly subfuscous except darker marginal cell; scapal basin with scattered light brown semi-erect hair, long erect brown hair on vertex and sides of head, similar hair on thorax, whitish on abdomen. Punctures of head and thorax moderate, of two sizes: larger ones on vertex, sides of head, pronotum, and metanotum, medium and nearly touching; smaller punctures on frons and face below compound eyes more separated; abdomen with dense punctation, nearly equal, but more separated on posterior margin of tergite II; tergite III with very fine, dense punctures behind pit row. Head 1.0 ( $\bar{x} = 1.0 \pm 0.06$ ) times broader than long; head width 1.9 ( $\bar{x} = 1.9 \pm 0.06$ ) times least interocular distance; scape 2.5 ( $\bar{x} = 2.4 \pm 0.12$ ) times and ocellocular distance 1.4 ( $\bar{x} = 1.8 \pm 0.29$ ) times least interocellar distance, respectively; flagellomere I 1.9 ( $\bar{x} = 2.0 \pm 0.14$ ) times as long as II in dorsal view, 1.2 ( $\bar{x} = 1.1 \pm 0.18$ ) times as long as malar space; subantennal distance 1.8 ( $\bar{x} = 1.8 \pm 0.24$ ), and malar space 2.4 ( $\bar{x} = 2.8 \pm 0.30$ ) times midocellus breadth, respectively; scapal basin with a small median vertical carina (Fig. 10), limited above by a prominent, rounded brow just above midpoint of compound eyes, as seen in an oblique lateral frontal view; propodeal teeth distinct, oblique, not hooked at ends; hind femur somewhat elongate, 3.3 ( $\bar{x} = 3.1 \pm 0.19$ ) times its greatest width. Tergite II with a hardly developed longitudinal carina, extending into tergite I; tergite III, in profile, sloping evenly to transverse row of pits, with median pits deeper and somewhat elongate, lateral pits smaller; pits not confluent; apical margin a smooth crescent (Fig. 12); sternites II, VIII, and genitalia (Figs. 1, 3–4, 6–7).

FEMALE.—Length 3.8–5.0 mm ( $\bar{x} = 4.2$  mm,  $n = 6$ ), width 0.9–1.1 mm ( $\bar{x} = 1.0$  mm). Color, vestiture, and punctation similar to males. Flagellomere I  $1.1 \pm 0.04$  times as long as malar space; malar space  $2.6 \pm 0.08$  times midocellus breadth. Spots on sternite II nearly absent; thorax generally darker blue, abdomen of some specimens dark violet dorsally; tergite IV green to golden, exerted in all specimens examined.

VARIATION.—The elongate spots on sternite II range from distinct to nearly absent due to the lack of pigmentation. The vertical median carina on the scapal basin is absent in some specimens. The green on the lower part of the scapal basin may have golden highlights.



This species may be distinguished from other nearctic *Chrysura* by the unusually slender form, the fine, even punctation on the abdominal tergites, the elongate and somewhat pointed third tergite, its crescent shaped apical margin (Fig. 12), and the reduced pit row.

MATERIAL EXAMINED.—7 males, 6 females. Collection data as given below extend from 29 March (Samuel Springs, Napa Co., California) to 8 July (Tanbark Flat, Los Angeles Co., California).

*Holotype male*, (UCD) JOHNSDALE (2 MI. E.), TULARE COUNTY, CALIFORNIA, 27 April 1964, on *Ceanothus* sp. (C. A. Toschi).

PARATYPES.—CALIFORNIA: *Los Angeles Co.*: Altadena, 4 April 1911, (USNM); Big Tujunga Canyon, 11 April 1953, (LACM); mountains near Claremont (CORN); Santa Susana Pass, 4 June 1961, (M. E. Irwin, UCD); Tanbark Flat, 8 July 1950, (B. J. Adelson, UCD), 22 June 1950, (J. W. MacSwain, CIS). *Mariposa Co.*: Miami Ranger Station, 9 June 1942, (UCD). *San Benito Co.*: Pinnacles National Monument, 24 April 1948, (J. W. MacSwain, CIS). *San Luis Obispo Co.*: La Panza Camp, 25 April 1968, (P. A. Opler, CIS).

RANGE.—Foothills of central and southern California in the Upper Sonoran and Transition zones.

FLORAL RECORDS.—*Ceanothus* sp., *Rhus diversiloba*.

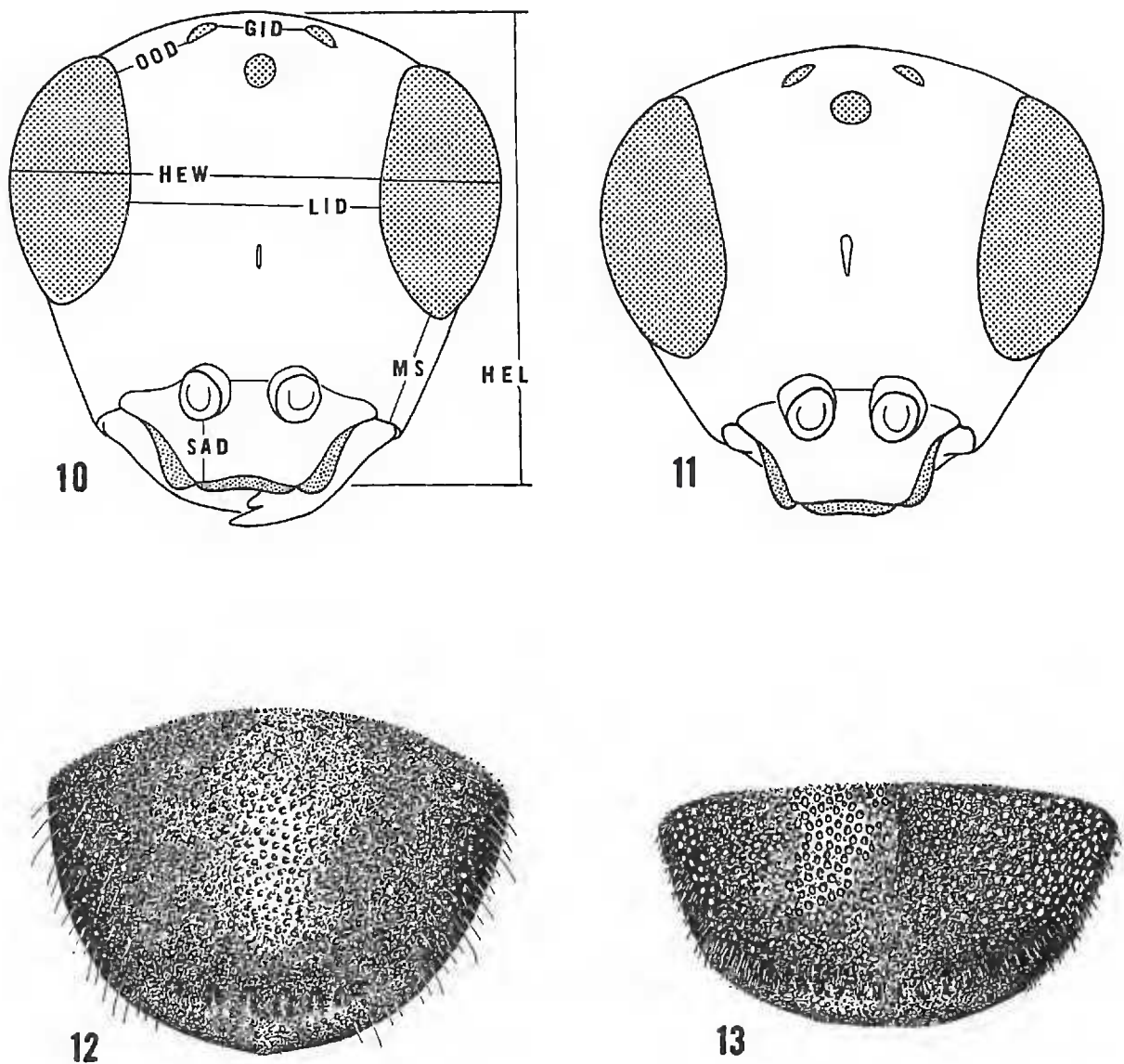
BIOLOGY.—No host known.

### *Chrysura boharti* Horning, new species

MALE.—Length 7.0 mm (5.5–8.5 mm,  $\bar{x} = 7.5$ ,  $n = 13$ ), width 2.4 mm (1.9–3.1 mm,  $\bar{x} = 2.6$  mm). Light green with scattered golden reflections; sternite II with two medium size, median dark spots (Fig. 2); legs green; first tarsal segment green dorsally, remaining segments dark reddish-brown; flagellomeres I–II greenish dorsally, remaining flagellomeres dark reddish-brown; wings uniformly subfuscous except fuscous marginal cell; scapal basin with scattered, white erect hair, more abundant on vertex, similar hair on rest of body, semi-erect and shorter on abdomen. Punctures of head medium, median area of clypeus with coarser moderate punctures, fine dense punctures laterally and below antennal sockets; pronotal punctures coarse, intermixed with finer ones, medium and moderate on scutum, coarse, nearly touching punctures on scutellum and metanotum; abdomen with medium, moderate punctures, slightly coarser on tergite I. Head 1.2 ( $\bar{x} = 1.2 \pm 0.04$ ) times broader than long; head width 2.0 ( $\bar{x} = 2.0 \pm 0.06$ ) times least interocular distance; scape 2.7 ( $\bar{x} = 2.5 \pm 0.20$ ) times and ocellular

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FIGS. 1–9. *Chrysura crescentis* n. sp. FIGS. 1, 3–4, 6–7. FIG. 1. Sternite II. FIG. 3. Sternite VIII, typical form. FIG. 4. Sternite VIII, variation from Big Tujunga Canyon, Los Angeles Co., California. FIG. 6. Left digitus (d) and cuspis (a = inner margin, b = apical margin, c = outer margin) of male genitalia. FIG. 7. Right gonostyle (a = inner margin, b = apical margin, c = outer margin). *Chrysura boharti* n. sp. FIGS. 2, 5, 8–9. FIG. 2. Sternite II. FIG. 5. Sternite VIII. FIG. 8. Left digitus and cuspis of male genitalia. FIG. 9. Right gonostyle.



FIGS. 10-13. *Chrysura crescentis* n. sp. FIGS. 10, 12. FIG. 10. Male, front view of head. FIG. 12. Male, tergite III. *Chrysura boharti* n. sp. FIGS. 11, 13. FIG. 11. Male, front view of head. FIG. 13. Male, tergite III.

distance 1.3 ( $\bar{x} = 1.3 \pm 0.05$ ) times least interocellar distance, respectively; flagellomere I 2.0 ( $\bar{x} = 2.0 \pm 0.16$ ) times as long as II in dorsal view, 1.6 ( $\bar{x} = 1.7 \pm 0.15$ ) times as long as malar space; subantennal distance 1.5 ( $\bar{x} = 1.7 \pm 0.19$ ), ocellocular distance 2.0 ( $\bar{x} = 2.3 \pm 0.17$ ), and malar space 1.8 ( $\bar{x} = 1.9 \pm 0.17$ ) times midocellus breadth, respectively; scapal basin nearly flat, with a small median carina (Fig. 11), with very faint cross striae below ocelli, brow not prominent; propodeal teeth distinct, oblique, ends rounded as viewed dorsally; hind femur elongate, 3.3 ( $\bar{x} = 3.1 \pm 0.12$ ) times its greatest width. Tergite III sloping evenly to transverse row of irregular, very small pits, some contiguous especially medially; apical margin arcuate, no median indentation (Fig. 13); sternites II, VIII, and genitalia (Figs. 2, 5, 8-9).

FEMALE.—Length 7.2-9.5 mm ( $\bar{x} = 8.1$ ,  $n = 11$ ), width 2.3-3.1 mm ( $\bar{x} = 2.6$  mm). Similar to males. Flagellomere I  $1.6 \pm 0.09$  times as long as malar space; malar space  $2.2 \pm 0.14$  times midocellus breadth. Color more green blue with less golden reflections except on face; flat golden green shiny spot

above antennal sockets; vertex hair light brown. Tergite III arcuate but more pointed medially; punctures on pit row more evident than for males, but still indistinct.

VARIATION.—Some specimens are entirely medium green with no golden highlights. The tegulae may be light green or may have a dark blue to purple spot. The large, dark spots on sternite II vary in intensity but they are always distinct. The metanotum is distinctly to moderately conical.

This species can be separated from other *Chrysura* by the distinctly arcuate third tergite and near absence of pits on the pit row. It can be best separated from the closely related *C. pacifica* (Say) by the malar space being 1.9 times the midocellus breadth (2.5 times in *C. pacifica*). The male genitalia closely resemble those of *C. pacifica*. However, in *C. boharti*, the cuspis has a characteristic bend (Fig. 8) and the apical margin of the gonostyle is broad (Fig. 9), with no definite indentation as in *C. pacifica*.

MATERIAL EXAMINED.—15 males, 12 females. Collection data as given below extend from 25 May (Hansen, Twin Falls Co., Idaho) to 23 July (Bannock Pass, Lemhi Co., Idaho).

*Holotype male*, (UCD) CROOKED CREEK LABORATORY, 10,150 FT., WHITE MOUNTAINS, MONO COUNTY, CALIFORNIA, 23 June 1961, (J. Powell).

PARATYPES.—CALIFORNIA: *Lassen Co.*: Hallelujah Junction, (D. R. Westrom, UCD); county only, 4 June 1913, (F. W. Nunemacher, CAS). *Mono Co.*: Crooked Creek Laboratory, 10,150 ft., White Mountains, 20–29 June 1953, (J. W. MacSwain, UCD, CIS, CNC), (G. W. Frankie, UCD, CIS), 23 June 1961, (J. S. Buckett, UCD), 26 June 1961, (J. Powell, UCD), 26 June 1961, (G. I. Stage, CIS), 16 July 1961, (W. A. Foster, CIS). *Nevada Co.*: Sagehen Creek near Hobart Mills, 23 June 1962, (M. E. Irwin, UCD), 9 July 1954, (J. A. Powell, UCD). IDAHO: *Butte Co.*: Craters of the Moon National Monument, 15 July 1957, (A. R. Gittins, IDAHO). *Lemhi Co.*: Bannock Pass, 23 July 1965, (R. L. Westcott, IDAHO); Meadow Lake—Gilmore (6 mi. w.), 20 July 1964, (R. L. Westcott, IDAHO). *Twin Falls Co.*: Hansen, 26 May 1929, light trap, (USNM). UTAH: *Cache Co.*: Logan, 5 June 1952, (G. E. Bohart, E. A. Cross, UCD). *Kane Co.*: Navajo Lake—9,000 ft., 19 June 1940, (R. M. Bohart, UCD). WASHINGTON: *Lincoln Co.*: Sprague, 20 June 1920, (M. C. Lane, USNM). WYOMING: *Albany Co.*: Foxpark—9,100 ft., 15 June 1920, (UCD). CANADA: *British Columbia*: Copper Mountain, 29 June 1928, (G. Stace-Smith, CNC).

RANGE.—*C. boharti* has been collected at somewhat forested, higher elevations in the western United States and Canada. It appears to be principally a Great Basin species.

FLORAL RECORDS.—*Achillea* sp., *Viola* sp.

BIOLOGY.—No host known.

I take pleasure in naming this species for Dr. R. M. Bohart, University of California, Davis, who has contributed to our knowledge of Chrysididae.

#### ACKNOWLEDGMENTS

Material has been examined and deposited in the following institutions: California Academy of Sciences (CAS); University of California at Berkeley (CIS); Canadian National Collection, Ottawa (CNC); Cornell University (CORN); University of Idaho, Moscow (IDAHO); Los Angeles County Museum (LACM); United States National Museum (USNM); University of California at Davis (UCD).

I appreciate the help of Mr. R. O. Schuster and Miss Susan K. Senser who gave assistance in the preparation of the illustrations.

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### A Synopsis of the Nearctic Species of *Antichaeta* Haliday with One New Species (Diptera : Sciomyzidae)

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We refer the North American species of *Antichaeta* to black forms (our designation) and the "yellow forms" of Steyskal (1960) as follows: The black forms (*A. johnsoni* (Cresson), *A. melanosoma* Melander, *A. canadensis* (Curran)) are the dominant species east of the Rocky Mts., and the "yellow forms" (testaceous is more accurate) (*A. fulva* Steyskal, *A. borealis* Foote, *A. testacea* Melander, *A. robiginosa* Mel., and *A. vernalis* Fisher and Orth<sup>2</sup> n. sp.) are the dominant representatives of the genus from the Rocky Mts. to the Pacific Ocean. Steyskal (1960: 25) based his interpretation of the phylogeny of the "yellow forms" in part on the status of the anterior surstyli. We have seen males of all five "yellow forms" and agree that these structures are lacking in *A. fulva*. However, both left and right anterior surstyli are present in the four remaining species.

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<sup>1</sup> Specialist and Laboratory Technician, respectively.

<sup>2</sup> Fisher and Orth hereafter abbreviated F. & O.